

What is claimed is:

1. A modular helmet-mask assembly which comprises:

(a) a helmet capable of enclosing the head of a user, said helmet comprising an

5 impact resistant material; and

(b) a face protection assembly, alternately attachable to and detachable from a front part of said helmet, which face protection assembly comprises

(i) a face protection shell comprising an impact resistant material;

(ii) a vision port through the shell at the level of the eyes of a user;

10 (iii) a flexible nosecup assembly within the shell, which nosecup assembly is positioned to engage the mouth and nose of a user, said nosecup comprising a breathe-through airflow assembly and a filter unit;

(iv) a flexible face seal, disposed on an inner surface of the shell around the nosecup assembly and the vision port, which face seal is capable of
15 engaging the face of a user; and

(v) an adjustable head harness attached at an surface of the shell or the face seal which is capable of engaging the back of a user's head to thereby adjustably secure the face seal and nosecup assembly to a user's face, and

(c) either (i) or (ii):

20 (i) a transparent, impact resistant lens fixed to the vision port at the level of the eyes of a user;

(ii) a transparent, impact resistant lens rotatably attached at the front part of the helmet and positioned to alternately engage and disengage with the vision port of the shell at the level of the eyes of a user.

25

2. The modular helmet-mask assembly of claim 1 further comprising a position adjustable adjustment pad attached at a rear part of said helmet which engages the

back of a user's head to thereby adjustably secure the face seal and nosecup assembly to a user's face.

3. The modular helmet-mask assembly of claim 1 comprising a transparent,
5 impact resistant lens fixed to the vision port at the level of the eyes of a user.
4. The modular helmet-mask assembly of claim 1 comprising a transparent,
impact resistant lens rotatably attached at the front part of the helmet and
positioned to alternately engage and disengage with the vision port of the shell at
10 the level of the eyes of a user.
5. The modular helmet-mask assembly of claim 1 wherein the impact resistant
shell material comprises graphite, fiberglass, or combinations thereof.
- 15 6. The modular helmet-mask assembly of claim 1 wherein the impact resistant
lens comprises polycarbonate, polyurethane, or combinations thereof.
7. The modular helmet-mask assembly of claim 1 wherein the face seal and
nosecup comprise an elastic material.
- 20 8. The modular helmet-mask assembly of claim 1 further comprising a
communications assembly comprising a microphone, a speaker, a transmitter and
a receiver integrated with said helmet-mask assembly.
- 25 9. The modular helmet-mask assembly of claim 1 further comprising a port for
connecting a source of breathing oxygen to said nose cup.

10. The modular helmet-mask assembly of claim 1 wherein the filter unit comprises a filter element comprising a material capable of filtering chemical vapors and biological aerosols.
- 5 11. The modular helmet-mask assembly of claim 10 wherein the filter element comprises a carbon filter.
12. The modular helmet-mask assembly of claim 2 wherein said adjustable adjustment pad comprises a tightening adjustment knob or a tightening adjustment
10 lever.
13. The modular helmet-mask assembly of claim 1 wherein the nosecup assembly further comprises a negative pressure filter assembly.
- 15 14. The modular helmet-mask assembly of claim 1 wherein the nosecup assembly further comprises a positive pressure filter blower device.
- 15 The modular helmet- mask assembly of claim 1 wherein the nosecup assembly further comprises a circulating filter blower device.
20
16. The modular helmet- mask assembly of claim 1 wherein the face protection assembly further comprises an electronic display.
17. A method for protecting a user's face from chemicals which comprises:
- 25 (I) providing a modular helmet-mask assembly which comprises
- (a) a helmet capable of enclosing the head of a user, said helmet comprising an impact resistant material; and

(b) a face protection assembly, alternately attachable to and detachable from a front part of said helmet, which face protection assembly comprises

- (i) a face protection shell comprising an impact resistant material;
- (ii) a vision port through the shell at the level of the eyes of a user;
- (iii) a flexible nose cup assembly within the shell, which nose cup assembly is positioned to engage the mouth and nose of a user, said nose cup comprising a breathe-through airflow assembly and a filter unit;
- (iv) a flexible face seal, disposed on an inner surface of the shell around the nose cup assembly and the vision port, which face seal is capable of engaging the face of a user; and
- (v) an adjustable head harness attached at an surface of the shell or the face seal which is capable of engaging the back of a user's head to thereby adjustably secure the face seal and nose cup assembly to a user's face, and

(c) either (i) or (ii):

- (i) a transparent, impact resistant lens fixed to the vision port at the level of the eyes of a user;
- (ii) a transparent, impact resistant lens rotatably attached at the front part of the helmet and positioned to alternately engage and disengage with the vision port of the shell at the level of the eyes of a user;

(II) placing the face protection assembly onto a user's head such that the flexible face seal engages the user's face, and such that the nose cup assembly engages the user's mouth and nose;

(III) adjusting the adjustable head harness such that the face seal and nose cup are secured to the user's face;

(IV) placing the helmet onto the user's head such that the helmet encloses the user's head and attaching the helmet to the face protection assembly; and
(V) adjusting the helmet to secure the helmet, face seal, and
nosecup assembly to the user's head.

5

18. The method of claim 17 wherein the modular helmet-mask assembly further comprises a position adjustable adjustment pad attached at a rear part of said helmet which engages the back of a user's head to thereby adjustably secure the face seal and nosecup assembly to a user's face, the method further comprising
10 adjusting the adjustment pad such that the face seal and nosecup are secured to the user's face.

19. The method of claim 17 wherein the modular helmet-mask assembly comprises a transparent, impact resistant lens fixed to the vision port at the level
15 of the eyes of a user.

20. The method of claim 17 wherein the modular helmet-mask assembly comprises a transparent, impact resistant lens rotatably attached at the front part of the helmet and positioned to alternately engage and disengage with the vision
20 port of the shell at the level of the eyes of a user.